

Work Order ID 54444

December 9, 2009 11:29:37 AM



Page 1

Item ID: D4013-041

Accept



Setup Start



Revision ID:

Stop



Item Name: Wearplate Assembly

Start Date: 09/12/2009 Start Qty: 10.00



Cust Item ID:

Required Date: 16/12/2009 Req'd Qty: 10.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

[Signature]

Date:

09-12-9

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D4013

C

100

0.00



Waterjet

FLOW CNC Waterjet

Memo

1-Cut as per Dwg D4013-1

Dwg Rev: *C*

Prog Rev: *C*

2-Deburr if necessary

0.00

IB 9-12-10

(10)

110

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Quality Control

Memo

0.00

IB 9-12-10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 54444

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Page 2

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Required Date: 16/12/2009 Req'd Qty: 10.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120 QC Quality Control	QC8- Inspect parts - second check Memo	0.00 0.00	27 8 09/12/11			(4/10)	1		
130 Brake NC Brake NC	Bend as per dwg Memo	0.00 0.00	88 09/12/17			10			
140 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00	27 8 09/12/17			(4/10)	1		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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NOTE: Date & initial all entries

Work Order ID 54444

December 9, 2009 11:29:37 AM



Page 3

Item ID: D4013-041
Revision ID:
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Setup Start



Stop



Start Date: 09/12/2009 Start Qty: 10.00



Cust Item ID:

Required Date: 16/12/2009 Req'd Qty: 10.00



Customer:

Reference:

Run Start



Stop



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

150

0.00



Large Fab

Memo

0.00

Large Fab

1- Weld cup, stud as per dwg use DT9550
A/R S.S. ROD BATCH: M 108/60

2- Apply hardfacing on wearplate and on studs (studs only 5 places not the cups)
as indicated on dwg
A/R HARDCOAT 2059B BATCH: M 113521

PL 10-1-28



160

QC5- Inspect part completeness to step on W/O

0.00



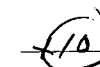
QC

Memo

0.00

Quality Control

=> 8 10/04/29



170

QC9- Inspect visual per QSI004- Fusion Welds

0.00



QC

Memo

0.00

Quality Control

PL 10/04/29

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 54444

December 9, 2009 11:29:37 AM



Page 4

Item ID: D4013-041

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Setup Start



Revision ID:

Stop



Item Name: Wearplate Assembly

Start Date: 09/12/2009 Start Qty: 10.00



Cust Item ID:

Required Date: 10/12/2009 Req'd Qty: 10.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

Black Sandtex(Ref:4.3.5.7) per QSI005 4.3

0.00



Powdercoat

Memo

0.00

START: 8:15AM
Temp: 320°F

X (10) 0

Powder Coating

MASK THREADS AND HEXAGONAL OPENING PRIOR TO PAINTING

FIN: 8:45AM 10-02-01 JEL

190

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

BR 10-02-01

(10) 0

200

Identify as per dwg & Stock Location: 206

0.00



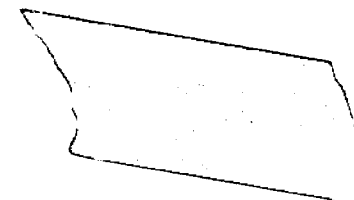
Packaging

Memo

0.00

Packaging

Page 2/3 (14)



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

December 9, 2009 11:29:41 AM

Page 1

Work Order ID: 54444



Parent Item: D4013-041



Parent Item Name: Wearplate Assembly

Start Date: 09/12/2009

Required Date: 16/12/2009

Comments: IPP RevA: New issue 09.10.26 DD verified by:JLM
RevB prelim per ECN 698p 09.11.02 DD verified
by:EC
redesign 09.11.12 DD verified by:EC

IPP RevB:

Start Qty: 10.00

Required Qty: 10.00

IPP RevC:

IPP RevD: revC as per

M304S16GA

Purchased

No

100

sf

400.6457 10.2105



304/316 Sheet .063



129-12-10

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

MAT

400.6456737

106860

16.018

111924

25.1689737

112442

29.8899

112567

0.2973

112885

9.2715

113295

320

113215

D4013-3

Manufactured

No

150

Each

66.0000 30.0000



Stud



10-1-25

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST139

40

53940

40

Main Warehouse

WA

26

53183

20

53827

6

54675 x 30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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NOTE: Date & initial all entries

Picklist Print

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Parent Item Name: Wearplate Assembly

Start Date: 09/12/2009

Required Date: 16/12/2009

Comments: IPP RevA: New issue 09.10.26 DD verified by:JLM
RevB prelim per ECN09-698p 09.11.02 DD verified
by:EC
redesign 09.11.12 DD verified by:EC

IPP RevB:

Start Qty: 10.00

Required Qty: 10.00

IPP RevC:

IPP RevD: revC as per

D4013-5 Manufactured No

150

Each

98.0000 60.0000



EL 10-1-25

Cup

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

WA

98

53828

12

53941

86

150

Each

35.0000 20.0000

D4013-9

Manufactured No



EL 10-1-25

Stud

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

35

53829

5

53948

30

B54677 x 20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Page 3

December 9, 2009 11:29:41 AM

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Parent Item: D4013-041



Parent Item Name: Wearplate Assembly

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Required Date: 16/12/2009

Comments: IPP RevA: New issue 09.10.26 DD verified by:JLM
RevB prelim per ECN09-698p 09.11.02 DD verified
by:EC
redesign 09.11.12 DD verified by:EC

IPP RevB:

Start Qty: 10.00

Required Qty: 10.00

IPP RevC:

IPP RevD: revC as per

D4013-11 Manufactured No

150

Each

34.0000

20.0000



EL 10-1-25

Stud

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

30

53954

30

Main Warehouse

WA

4

53830

4

B54679 x 20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

24444

DART AEROSPACE LTD		Work Order: 5555
Description: WEAR PLATE		Part Number: D4013-1
Inspection Dwg: D4013-1 Rev: C		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

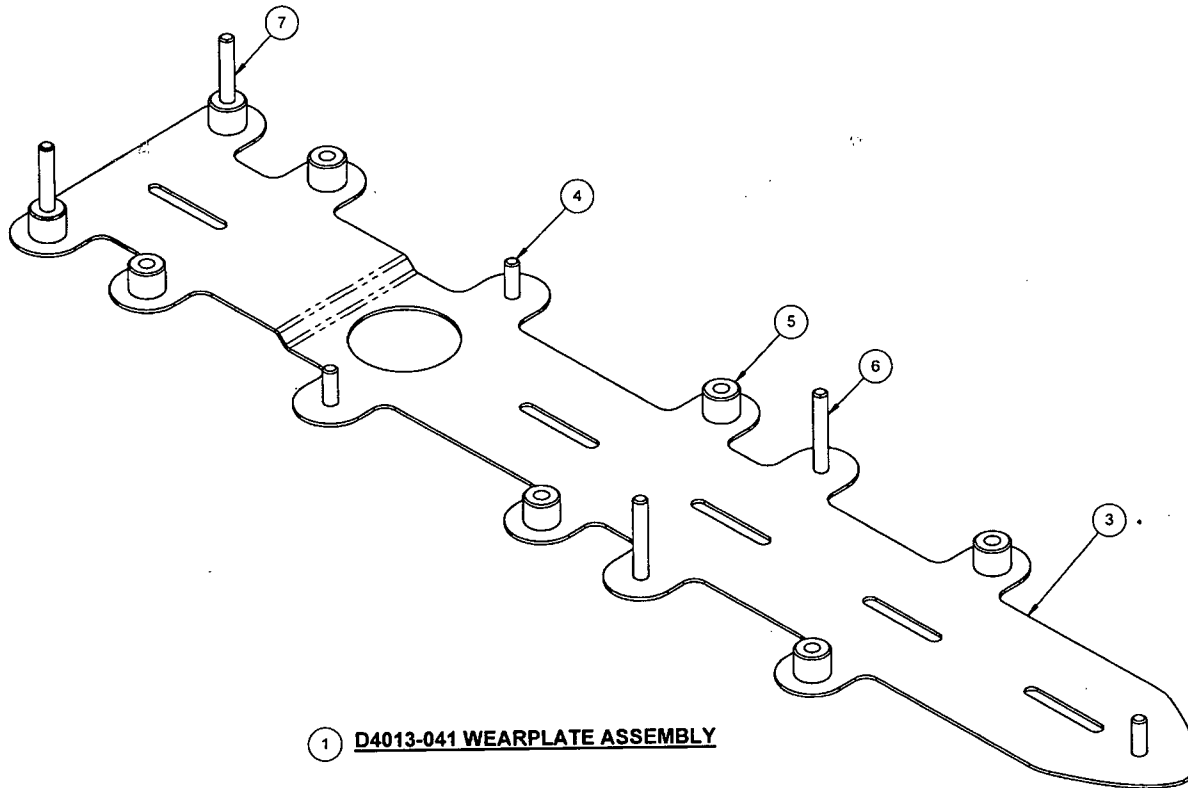
☒ First Article ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø .250	+ .005 - .001	.253	✓			
Ø .625	+ .008 - .001	.626	✓			
Ø 1.88	+ .012 - .001	1.887	✗	1.88		IMPOSSIBLE TO GET 1.88 SO GET TOOL RADIUS TO GET HOLES THAT MATTER
.250	± .010	.252	✓			
1.750	± .010	1.751	✓			
1.50	± .030	1.504	✗			
2.125	± .010	2.124	✓			
2.75	± .030	2.750	✓			
.625	± .010	.624	✗			
2.938	± .010	2.936	✗			
6.876	± .010	6.879	✓			
7.211	± .010	7.211	✗			
12.146	± .010	12.146	✗			
14.458	± .010	14.458	✗			
18.458	± .010	18.458	✓			
23.958	± .010	23.958	✗			
25.04	± .030	25.04	✓			
.063	± .010	.054	✗			

Measured by: KB	Audited by: S	Prototype Approval: N/A
Date: 9-11-22	Date: 09/12/11	Date: N/A

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	

P/O D4013/041



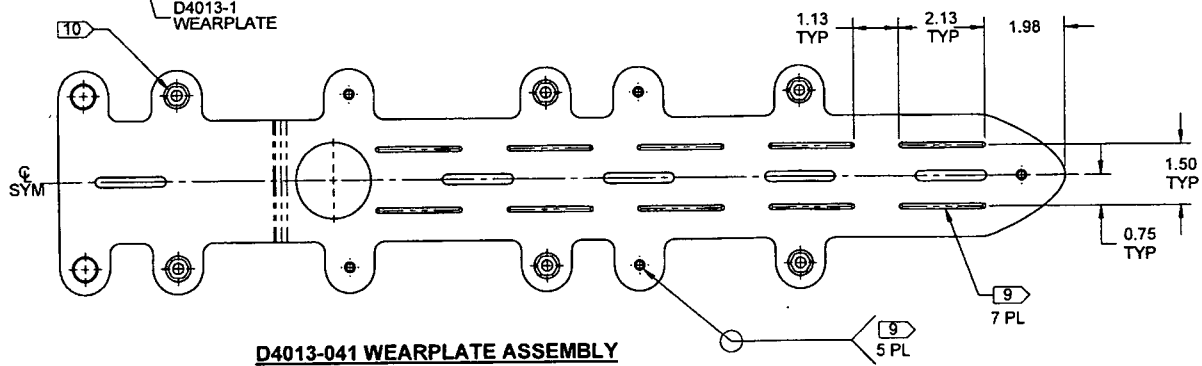
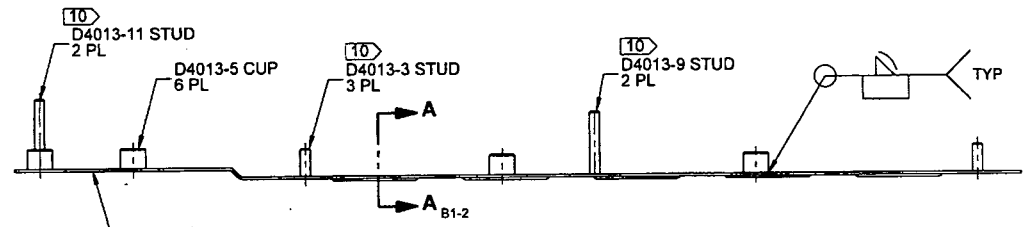
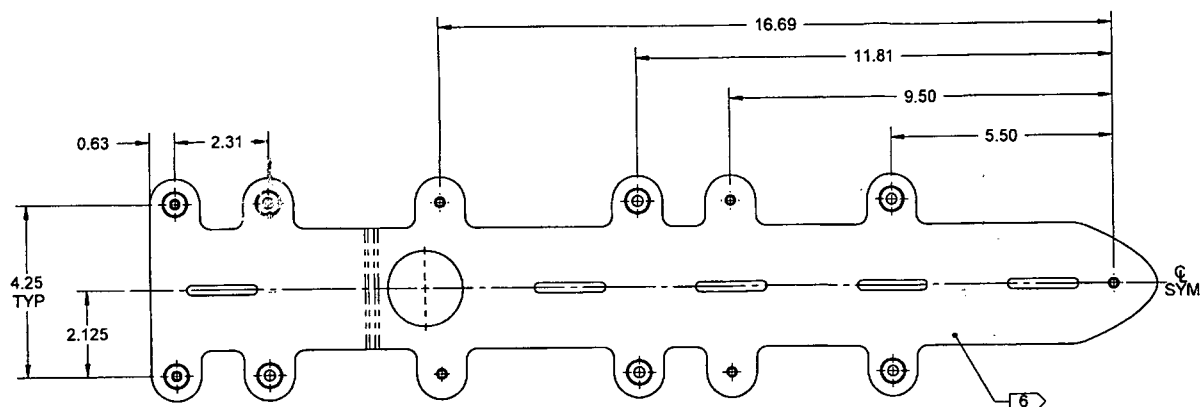
1 D4013-041 WEARPLATE ASSEMBLY

ITEM	QTY -041	P/N	DESCRIPTION
1	X	D4013-041	WEARPLATE ASSEMBLY
3	1	D4013-1	WEARPLATE
4	3	D4013-3	STUD
5	6	D4013-5	CUP
6	2	D4013-9	STUD
7	2	D4013-11	STUD
21	A/R	2059B	HARDCOAT

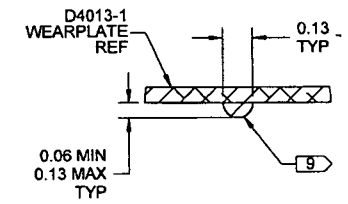
SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 34444
0912-9

RELEASED
2009-11-24
MP

C	SIMPLY DESIGN FOR MANUFACTURING PURPOSES; REDESIGNED ITEM 5; ELIMINATED D4013-7 CUP (NO LONGER USED); CHANGED FINISH FROM GREY TO BLACK SANDEX	MB	09.11.11
B	REDESIGN	MB	09.11.02
A	NEW ISSUE	MB	09.10.22
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>LA</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	<i>AS</i>		
CHECKED	<i>AS</i>	DRAWING NO.	REV. C
MFG. APPR.	<i>AS</i>	D4013	SHEET 1 OF 5
APPROVED	<i>AS</i>	TITLE	SCALE
DE APPR.	<i>AS</i>	WEARPLATE ASSEMBLY	NTS
DATE	09.11.11	COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



D4013-041 WEARPLATE ASSEMBLY



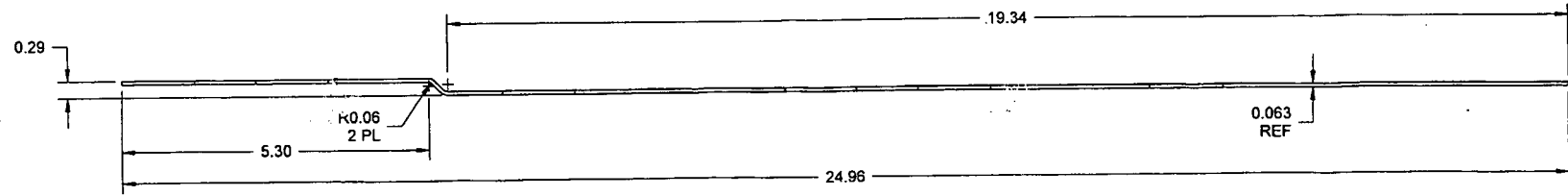
SECTION A-A B6-2
SCALE 6X

- NOTES:**
- 1) MATERIAL: SEE SHEETS 3 AND 4
 - 2) FINISH: POWDER COAT "BLACK SANTEX" (4.3.5.7) PER DART QSI 005 4.3 \triangle
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D4013-041" USING FINE POINT PERMANENT INK MARKER
 - 7) WEIGHT: 1.89 lbs
 - 8) WELDING: PER QSI 004
 - 9) 2059B HARDCOAT WELD, 10 PL
 - 10) MASK THREADS (7 PL) AND HEXAGONAL OPENINGS (6 PL) PRIOR TO PAINTING

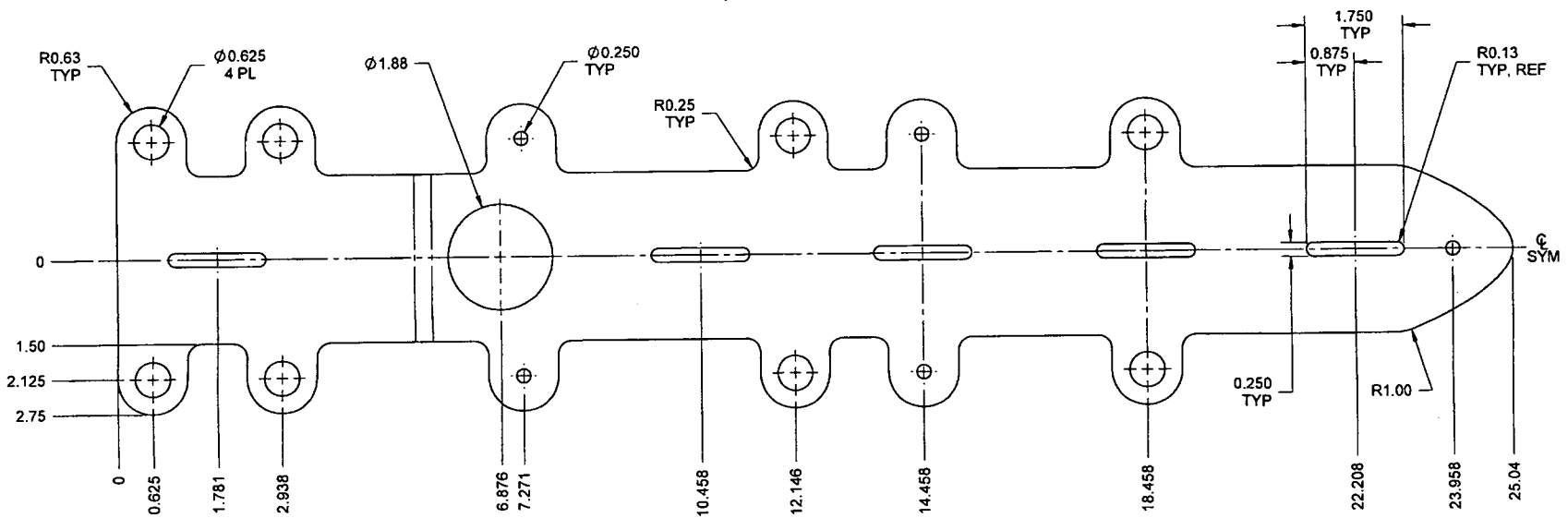
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DRAWN	1	HAWKESBURY, ONTARIO, CANADA	
CHECKED	115	DRAWING NO.	REV. C
MFG. APPR.	115	D4013	SHEET 2 OF 5
APPROVED	115	TITLE	SCALE
DE APPR.	115	WEARPLATE ASSEMBLY	
DATE	09.11.11	NTS	
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RELEASED
2009-11-24

W/10 54444



D4013-1 WEARPLATE
(MAKE FROM D4013-1F)



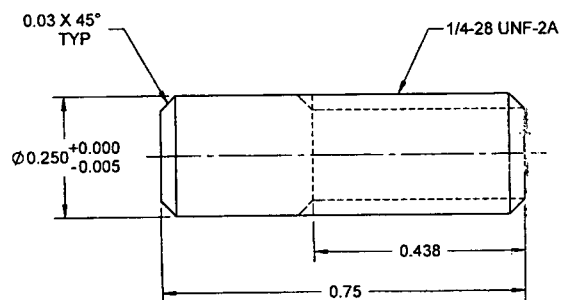
D4013-1F WEARPLATE FLAT PATTERN

- NOTES:**
- 1) MATERIAL: AISI 304/316 STAINLESS STEEL SHEET ANNEALED 2B FINISH, 16 GAUGE (0.063 THICK)
PER AMS 5513 (304) OR 5524 (316) OR ASTM A240 OR ASME SA240
REF. DART SPEC. M304S16GA
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: NONE
 - 7) WEIGHT: 1.48 lbs

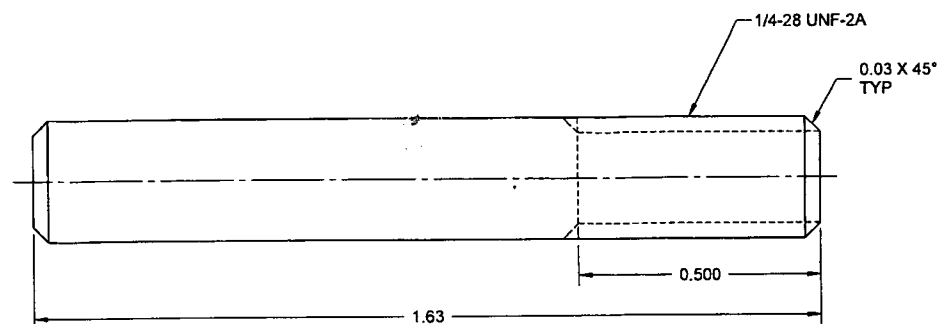
RELEASED
2009-11-24

W/O 54444

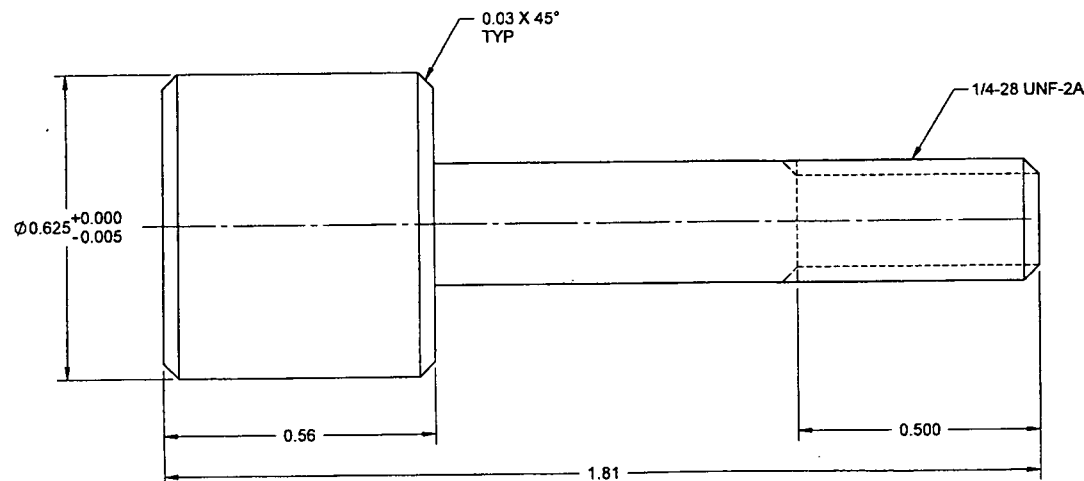
DESIGN	1	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D4013 TITLE WEARPLATE ASSEMBLY SCALE NTS COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRELIMINARY AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.
DRAWN	1	
CHECKED	1	
MFG. APPR.	1	
APPROVED	1	
DE APPR.	1	DATE 09.11.11 REV. C SHEET 3 OF 5



D4013-3 STUD



D4013-9 STUD



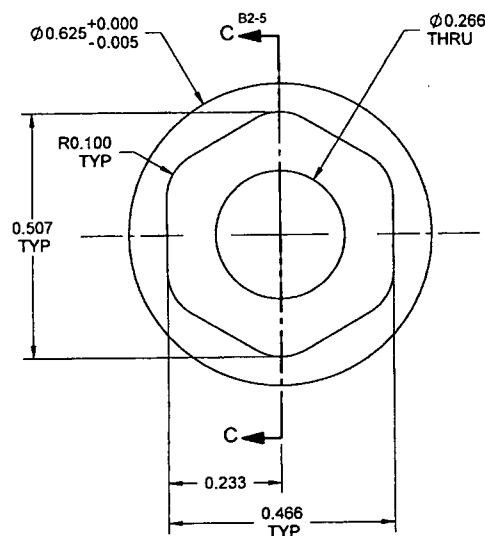
D4013-11 STUD

NOTES:

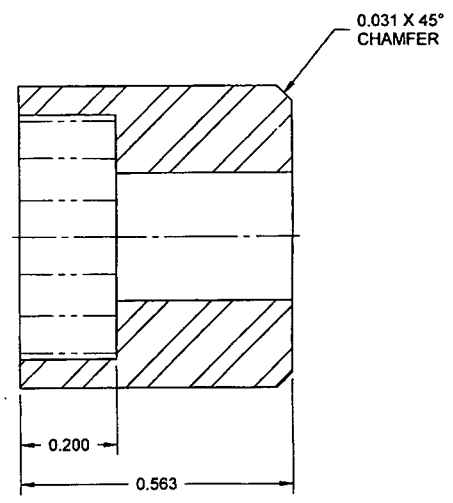
- 1) MATERIAL: AISI 304/316 STAINLESS STEEL ROUND BAR
REF. DART SPEC. M304R
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: LESS THAN 0.01 lbs EACH

RELEASED
2009-11-24
WB

DESIGN		DART AEROSPACE LTD	
DRAWN	<i>JS</i>	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>JS</i>	DRAWING NO. D4013	REV. C
MFG. APPR.	<i>JS</i>	SHEET 4 OF 5	
APPROVED	<i>JS</i>	TITLE	SCALE
DE APPR.	<i>JS</i>	WEARPLATE ASSEMBLY	NTS
DATE	09.11.11	<small>COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	



C D4013-5 CUP



SECTION C-C D6-5

- NOTES:**
- 1) MATERIAL: AISI 304/316 STAINLESS STEEL ROUND BAR PER ASTM A276
REF. DART SPEC. M304R
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: NONE
 - 7) WEIGHT: 0.03 lbs EACH

DESIGN	1	DART AEROSPACE LTD	
DRAWN	1	HAWKESBURY, ONTARIO, CANADA	
CHECKED	1/5	DRAWING NO.	REV. C
MFG. APPR.	1/5	D4013	SHEET 5 OF 5
APPROVED	1/5	TITLE	SCALE
DE APPR.	1/5	WEARPLATE ASSEMBLY	NTS
DATE	09.11.11	<small>COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

RELEASED
2009-11-24
MD

W/6 34444